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Before The
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Petition for an Extension of the	)	
Compliance Date under Section 107(c)	)	CC Docket No. 97-213
of the Communications Assistance for	)	
Law Enforcement Act, by	)	
Iridium United States, L.P., and	)	
Motorola, Inc.	)	
	)	
To: The Commission	)	

JOINT PETITION FOR AN EXTENSION OF THE CALEA ASSISTANCE CAPABILITY COMPLIANCE DATE

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SUMMARY

On September 23, 1998, Petitioners plan to begin commercial service on a fully operational global mobile satellite communications service, the Iridium®[1] system, employing 66 low Earth orbit satellites linked to 11 Gateway Earth stations around the world and Iridium Subscriber Unit handsets. The system will provide "integrated communications services to all parts of the world, including those that are now grossly underserved."[2] The Iridium system will also provide on that date electronic surveillance capability believed by Petitioners to be compliant with the technical requirements of the Communications Assistance for Law Enforcement Act ("CALEA").

However, although Petitioners are deploying a feature-rich system for intercepts, law enforcement officials have been unwilling to state in writing that the Iridium approach is CALEA compliant. Short of compliance with a safe harbor standard, which does not exist for satellite telephony, the statute does not include any obvious procedure for an industry participant to receive confirmation about compliance. Petitioners have discussed this issue with the FBI on several occasions but have not yet received any assurance that they are protected from the threat of an enforcement action (nor have they received any such assurance from state law enforcement authorities).

Further, the pending Commission rulemaking proceeding relating to the terrestrial telephony interim standard may create uncertainty as to whether additional capabilities are

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[1] Iridium is a registered trademark and service mark of Iridium LLC.

[2] Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile-Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, 9 FCC Rcd 5936, 5939 (1994).

required under CALEA for non-terrestrial telephony communications systems. Petitioners will need at least two years to implement additional wiretap capabilities resulting from ongoing discussions with law enforcement or that might flow from future Commission rulemaking actions or judicial review. Accordingly, Petitioners respectfully request a two-year extension pursuant to CALEA Section 107(c).

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JOINT PETITION FOR AN EXTENSION OF THE CALEA ASSISTANCE CAPABILITY COMPLIANCE DATE

Pursuant to Section 107(c) of the Communications Assistance for Law Enforcement Act ("CALEA"),[1] Section 1006(c) of the Communications Act, Iridium United States Limited Partnership (Iridium North America or "INA") and Motorola, Inc. ("Motorola"), (collectively "Petitioners"), hereby respectfully petition the Commission for a two year extension of CALEA's October 25, 1998 deadline for compliance with Section 103.

I. INTRODUCTION

Petitioners have developed and completed the launch of the satellite constellation for the Iridium®[2] system, a global mobile satellite communications service which employs 66

[1] Pub. L. 103-414, 108 Stat. 4279 (1994), codified at 47 U.S.C. §§ 1001 et seq.

[2] Iridium is a registered trademark and service mark of Iridium LLC.

low Earth orbit satellites linked to the Public Switch Telephone Network ("PSTN") through Gateway Earth stations around the world, and Iridium subscriber unit ("ISU") handsets.[3] Petitioners plan to introduce a fully operational Iridium system for commercial use on September 23, 1998.[4] The Iridium system will, on that date, include electronic surveillance capability believed by Petitioners to be compliant with CALEA's capability requirements.

Petitioners have briefed the FBI and its contractor, Booz-Allen & Hamilton, in detail on the intercept capabilities of the Iridium system and have received indication from FBI representatives that the solution is generally acceptable. However, Petitioners have yet to receive confirmation from law enforcement that they are in compliance with CALEA. The FBI has neither formally approved nor objected to the Iridium system's intercept capability approach. Although Petitioners intend to continue discussions with law enforcement about the Iridium system's wiretap capabilities (and address the remaining uncertainty regarding capacity), they cannot do so efficiently or effectively under the threat of enforcement actions which inevitably pervade such discussions. Also, it is impractical for the Petitioners to attempt to reach agreement with each of the law enforcement authorities of the fifty states and other law enforcement agencies authorized to conduct wiretaps; therefore, Petitioners cannot reasonably attain assurance that enforcement will not be sought by state agencies.

Finally, although the pending Commission rulemaking proceeding relating to terrestrial telephony interim standard J-STD-025 does not apply to mobile satellite

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[3] See attached declaration of Motorola Space Systems and Technology Group engineer Pramod Patel ("Patel Declaration"), Tab A, ¶ 5.

[4] Id. ¶ 7.

communications, the impact of the Commission's findings as to which capabilities are required under CALEA could easily extend beyond terrestrial telephony systems and affect the legal landscape of how industry and law enforcement interpret CALEA. Petitioners will need at least two years to implement new wiretap capabilities that might be required of satellite systems by the Commission's anticipated rulemaking on terrestrial systems or as a result of any judicial review of such rulemaking.

Accordingly, Petitioners submit this petition requesting a two-year extension pursuant to Section 107(c) of CALEA. Granting Petitioners' extension request will not impact law enforcement's surveillance capability, because a substantial portion of the Iridium system's planned CALEA approach described below will become available when the system is deployed, which is presently scheduled for September 23, 1998. The extension will allow Petitioners to complete development and deployment of their Iridium system CALEA approach and to evaluate requirements that may flow from legal determinations made with regard to terrestrial systems.

II. BACKGROUND

A. THE PETITIONERS

Motorola, a leading telecommunications manufacturer in the United States, designs, manufactures, and delivers transmission and switching equipment, public and private networks, data networking systems, business telephone systems, microelectronic components, communications systems and software, two-way radios, pagers, personal communications systems, cellular telephones and systems, discrete semiconductors and integrated circuits,

computers, data communications, and information processing and handling equipment.[5] Motorola is the prime contractor to Iridium LLC for the procurement of the Iridium system. Motorola's Satellite Communications Group ("SatCom") developed the concept for the Iridium system, is the supplier of the groundstations, is the licensee for the satellites, and is one of two suppliers of the handsets.[6]

INA is a limited partnership owned by subsidiaries of Motorola, Inc., Sprint Corporation, and BCE, Inc. INA is the operator of the Iridium Gateway in Tempe, Arizona, and authorized under § 214 of the Communications Act of 1934 to provide common carrier mobile satellite service to, from, or within the United States.[7]

Iridium LLC will own and operate the satellites.[8] Iridium LLC has allocated to INA the North American Gateway service territory.

B. THE STATUTE

As the Commission is well aware, in 1994, Congress passed an ambitious but balanced statute, CALEA, to respond to law enforcement's reported difficulties in performing effective surveillance of communications employing new technologies and enhanced services, while at the same time protecting privacy and encouraging technological innovation.[9]

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[5] Patel Declaration ¶ 3.

[6] Id. ¶ 8.

[7] Id.; see also FCC File No. ITC-97-697.

[8] Patel Declaration ¶ 8.

[9] The Act "seeks to balance three key policies: (1) to preserve a narrowly focused capability for law enforcement agencies to carry out properly authorized intercepts; (2) to protect privacy in the face of increasingly powerful and personally revealing technologies; and (3) to avoid impeding the development (Continued ...)

CALEA reflects a clear Congressional plan for a cooperative and gradual process for implementation of new wiretap capabilities. Within the first year after CALEA's enactment, the Attorney General was to have satisfied the statute's directive to establish capacity requirements for each system.[10] Manufacturers were thereafter to develop, and make commercially available to carriers, equipment implementing the CALEA capability and capacity requirements. Carriers were then to provide law enforcement with certain call content information and "call identifying information that is reasonably available to the carrier."[11] Four years after CALEA's enactment, the industry was to have implemented CALEA and begun serving the surveillance needs of law enforcement, while protecting privacy and encouraging technological innovation.

The drafters of CALEA recognized, however, that the temporal sequencing established for introducing capability and capacity could be disrupted, and they provided for extensions to be invoked as needed, to allow industry participants to address the challenges of CALEA implementation without penalty. Section 107(c)(1) of CALEA allows a telecommunications carrier to "petition the Commission for one or more extensions of the deadline for complying with the assistance capability requirements under section 103."[12] Section 107(c)(2) of CALEA expressly grants the Commission the authority to "grant an extension under

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of new communications services and technologies." H.R. Rep. 103-827, at 13, reprinted in 1994 U.S.C.C.A.N. 3489.

[10] Section 104(a)(1)(B) of CALEA; 47 U.S.C. § 1003(a)(1)(B).

[11] Section 103(a) of CALEA; 47 U.S.C. § 1002(a).

[12] Section 107(c)(1) of CALEA; 47 U.S.C. § 1006(c)(1).

this subsection, if the Commission determines that compliance with the assistance capability requirements under section 103 is not reasonably achievable through application of technology available within the compliance period."[13]

III. THE COMMISSION SHOULD GRANT PETITIONERS' REQUEST FOR AN EXTENSION OF THE CALEA ASSISTANCE CAPABILITY COMPLIANCE DATE

For more than four years, Petitioners have been working to implement assistance intercept capabilities responsive to law enforcement's surveillance needs in the unique Iridium system.[14] Well before the passage of CALEA, SatCom and INA began analyzing the technical implications of CALEA for the Iridium system, discussing Iridium's intercept capabilities with the government, and exploring electronic surveillance architecture solutions particular to the Iridium system. For example, on June 7 and August 10, 1994 Motorola met with representatives from the General Accounting Office to discuss the scope of the draft legislation and answer their questions about electronic surveillance in the Iridium system.[15] The group discussed whether

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[13] Section 107(c)(2) of CALEA; 47 U.S.C. § 1006(c)(2). In addition, as the Personal Communications Industry Association, the Department of Justice and the Federal Bureau of Investigation have noted in their filings in Docket Nos. 97-213 and 97-356, Section 4(i) of the Communications Act grants the Commission the authority to "make such rules and regulations, and issue such orders, not inconsistent with [the Act], as may be necessary in the execution of its functions." 47 U.S.C. § 154(i). Finally, under the Commission's own rules of practice and procedure, the "Commission may, in accordance with section 5(d) of the Administrative Procedure Act, on motion or on its own motion issue a declaratory ruling ... removing uncertainty," to the extent there is any uncertainty as to the carriers and manufacturers' reasonableness in satisfying their respective obligations under CALEA. See 47 C.F.R. § 1.2.

[14] Patel Declaration, Tab A.

[15] Id. ¶ 11.

Iridium would be subject to the legislation, what was technologically possible in the first generation, and what Iridium could provide in over air interception.[16]

As the first global mobile satellite system utilizing low Earth orbit satellites for voice services, the Iridium system involves novel and complex issues with regard to intercept capabilities. For instance, there is no central location through which all calls on the Iridium system are routed automatically and where interception can occur.[17] Iridium is substantially different from cellular and wireline services; hence, development according to cellular- and wireline-focused standards was not a viable option.[18]

Moreover, as a global service, the Iridium system must receive authorization to provide mobile satellite service in each country which it serves. Each licensing administration or governmental authority may impose different conditions on the system and have different needs and requirements, which could have an impact on its operations. SatCom thus had to take into account different countries' needs and requirements in developing intercept capabilities for the new system.[19]

Motorola devoted many thousands of person-hours of scarce engineer-time—skills recognized as virtually impossible to find in any quantity in today's tight market for electrical engineers and software programmers/engineers—to examine the unique technical

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[16] Id.

[17] Id. ¶ 9.

[18] Id. ¶¶ 9-10.

[19] Id. ¶ 10.

issues raised by CALEA in the Iridium context.[20] SatCom engineers examined the most appropriate and least perceptible intercept location in the Iridium system, pursuing the possibilities of interception at the level of the Iridium Subscriber unit ("ISU"), the space vehicle, and the Gateway.[21]

In 1995, after examining different intercept options, SatCom engineers found that the most feasible intercept location was the Gateway servicing the ISU subscriber at the time of the interception.[22] This CALEA solution will allow the interception of calls to and from ISUs, regardless of whether the other party to the call is in the PSTN or on another ISU.[23] Petitioners

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[20] Id. ¶ 12.

[21] Id. ¶ 13.

[22] Id. ¶ 14. SatCom engineers developed a baseline architecture solution under which the switch will recognize the selected telephone number (identified as an intercept target by law enforcement before the call is placed) when a call is made or received, and will route the call (even an ISU to ISU call) through the visiting Gateway where it can be accessed. This interception, "grounding the call," will temporarily and reasonably imperceptibly divert the normal voice traffic flow through the space vehicle constellation. Id. ¶ 16.

Monitoring will be accomplished by looping a monitoring center, controlled by an authorized person, into the path of the subscriber's call. In effect, the Gateway Switching Center will set up a multiparty call, and transmit voice in one direction for the last leg of the call, to the monitoring center. Through the Siemens D900 switch system, authorized agencies can monitor voice calls for home subscribers as well as foreign roamers in the Iridium network. The subscriber activities that can be monitored are mobile originations and mobile terminations at the visited Mobile Switching Center ("MSC") as well as call forwarding at the gateway MSC. The visited MSC is the MSC serving the subscriber, and the gateway MSC is the MSC that interfaces to the PSTN. Monitored calls may be routed over E1 facilities using Integrated Services Digital Network User Part signaling to a monitoring center. Id. ¶ 17.

Additionally, call identifying information for each call will be generated and routed over X.25 links. The X.25 interface will be used for transmitting the following call parameters to the monitoring centers: date, time, type of call, calling number, and the called number. Location information will be provided at the beginning of each call. Id. ¶ 18.

[23] Id. ¶ 14.

developed their Iridium intercept capability solution while consulting regularly with law enforcement. In meetings, Petitioners and the FBI agreed that the Gateway intercept was the best CALEA approach for the Iridium system.[24]

Petitioners agreed to make the substantial changes necessary to implement a CALEA-compliant Iridium intercept capability approach,[25] and contracted with Siemens to provide the capability features over the earliest available Siemens annual software releases.[26] The baseline intercept capability feature for the Iridium system was introduced in November 1995.[27]

After introducing the baseline intercept capability, SatCom, INA and Iridium LLC continued to exchange numerous questions and answers with law enforcement and discuss interception issues unique to the Iridium system. Motorola, Iridium LLC, INA, and the FBI met on November 13, 1996 to discuss the Iridium system's capabilities and the development of

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[24] Id. ¶ 15.

[25] Development of the Gateway intercept capability solution required substantial enhancement of the system, including: a change in switch, a change in the Earth Terminal Controller, an enhancement to accommodate interfaces needed for the law enforcement monitoring center, and a change in the design layout of Gateway equipment and Gateway building. To have intercept capability, the Gateway had to have the following additional or modified specifications: the intercept file, an expanded database managed by the Gateway Switching Center for the purpose of performing call intercept, which will contain all the subscribers to be monitored; modifications to the Iridium Gateway Application Part interface between the Gateway Switching Center and the Earth Terminal Controller in order for the Gateway Switching Center to notify the Earth Terminal Center that a call is bring intercepted. Id. ¶ 19.

[26] Id. ¶ 20.

[27] Id.

additional intercept features.[28] The FBI agreed that, based on the system described, there was no need to delay the Iridium system's scheduled satellite launches to address CALEA compliance.[29]

Although many features desired by the FBI were (and still are) hotly contested in the proceedings concerning terrestrial telephone systems on the ground that they are not required by CALEA, Petitioners designed and developed extensive intercept capabilities beyond mere delivery of call content and reasonably available call data.[30] INA contracted to purchase and SatCom committed to provide many capabilities that are similar to those contained in the terrestrial telephony industry safe harbor standard,[31] as well as many of the punch list features being sought by the FBI in the pending Commission proceeding in CC Docket No. 97-697.[32] The additional intercept capabilities were introduced in April 1997 (in Software Release 5.0) and in May 1998 (in Software Release 6.0).[33] The intercept capabilities supported in the Iridium system are set forth in the attached summary analysis.[34]

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[28] Id. ¶ 21.

[29] Id.

[30] Id. ¶ 23.

[31] Although the terrestrial telephony interim standard J-STD-025 does not purport to cover satellite-based telephone services and the FBI's punch list was not prepared contemplating satellite systems, many of the intercept capabilities of the Iridium system are similar to those set forth in J-STD-025 and those being sought by the FBI.

[32] Id. ¶ 24.

[33] Id. ¶¶ 22 and 24.

[34] The attached summary analysis outlines the features provided in the Iridium CALEA approach, as well as an explanation of whether the features set forth in the terrestrial telephony industry standard J-STD-025, and the FBI's ballot comments to the proposed standard, are applicable to and supported in the Iridium system. See Tab B.

SatCom has made available on a timely basis and at a reasonable charge to INA and Iridium LLC such features or modifications as are necessary to comply with the assistance capability and capacity requirements of CALEA.[35] Petitioners believe they are in compliance with their assistance obligations under CALEA. However, despite the substantial efforts expended in developing and deploying a CALEA solution satisfying law enforcement's expansive requests, and despite the advanced intercept capabilities provided in the Iridium system, law enforcement officials have been unwilling to state in writing that the Iridium approach is compliant with CALEA, leaving Petitioners in a state of uncertainty as they prepare to deploy this new communications system on September 23, 1998.

Short of compliance with a safe harbor standard, which does not exist for satellite telephony, the statute does not include any obvious procedure for an industry participant to receive confirmation about compliance. Petitioners have discussed this issue repeatedly and at length with the FBI, and even discussed in the December 1997 meeting the possibility of entering a cooperative agreement with regard to implementation of the system's CALEA approach.[36] However, law enforcement has not been responsive as yet to this issue. It has not given Petitioners any assurance that they are protected from the threat of an enforcement action after October 25, 1998, nor has it stated whether it believes that additional intercept capabilities beyond those already planned will be sought by law enforcement for the Iridium system. Petitioners need an extension to allow them to continue their good faith discussions and cooperation with law enforcement, without threat of punitive action.

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[35] Patel Declaration ¶ 29; see also Section 106(b) of CALEA; 47 U.S.C. § 1005(b).

[36] Patel Declaration ¶ 22.

Moreover, Petitioners recognize that, although the pending Commission rulemaking proceeding relating to the terrestrial telephony interim standard does not apply to mobile satellite communications, the Commission's findings as to which capabilities are required under CALEA will affect the legal landscape of how industry and law enforcement interpret CALEA. Although Petitioners are deploying a feature-rich system for intercepts, the Commission's rulemaking may create uncertainty as to whether additional capabilities are required under CALEA for non-terrestrial telephony telecommunications systems (or will be believed by law enforcement to be required), and could require Petitioners to evaluate adjustments to the Iridium system's CALEA approach. Petitioners will need at least two years to implement additional wiretap capabilities as might be indicated by judicial interpretation of CALEA's basic provisions flowing from the Commission's legal findings in the anticipated rulemaking on terrestrial telephone systems.[37]

Finally, despite Petitioners' good faith substantial efforts to develop and deploy their CALEA-compliant intercept approach in a reasonably timely manner, and despite their long-running cooperative exchanges with law enforcement, there remains uncertainty with regard to capacity. The Attorney General and law enforcement have yet to define capacity requirements for the Iridium system.[38] In November 1996, during a meeting to discuss CALEA, the FBI acknowledged that it had not yet defined its capacity needs for the Iridium system, but

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[37] Id. ¶ 28.

[38] Pursuant to Section 104(a) of CALEA, the Attorney General was to publish capacity notices by October 25, 1995. 47 U.S.C. § 1003(a).

stated that it would do so in the near future.[39] In a March 1997 meeting, the FBI stated that it did not know when it would release a capacity notice for satellite service.[40] In March 1998, the Attorney General published a final capacity notice for voice telephony, without addressing capacity requirements for other technologies such as satellite service.[41]

The Iridium system CALEA approach could impact the sizing and capacity of a Gateway since it would utilize many common Gateway resources such as transcoders in the Earth Terminal Controller, and trunking between the Earth Terminal Controller and the Gateway Switching Center.[42] Moreover, the grounding of intercepted calls will use some of the capacity of the K-band feeder link between the space vehicles and the Gateways.[43] The impact of capacity on the Iridium system CALEA approach cannot be predicted accurately until the maximum number of simultaneously monitored calls to be supported by a particular Gateway and the percentage of calls to be intercepted at that Gateway are known. The drafters recognized the uncertainty created by a delay in the publication of capacity notices and provided that "[i]n the event the Attorney General publishes the notices after the statutory [one year] time limit, carriers will have three years thereafter to comply" with capacity requirements.[44]

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[39] Patel Declaration ¶ 26.

[40] Id.

[41] See Implementation of Section 104 of the Communications Assistance for Law Enforcement Act, 63 Fed. Reg. 12,218, 12,200 (Mar. 12, 1998).

[42] Patel Declaration ¶ 25.

[43] Id.

[44] H.R. Rep. No. 103-827, at 25 (1994). Petitioners have attempted to assist the FBI in defining its capacity needs. For example, in January 1997, in response to a query from the FBI, Petitioners (Continued ...)

Nevertheless, despite the uncertainty regarding the capacity requirements, and despite the substantial challenges of developing a CALEA approach in the new and unique Iridium context, Petitioners have done a great deal to design, develop, and deploy CALEA-compliant equipment. Petitioners simply request an extension under Section 107(c) to allow them, in conjunction and cooperation with law enforcement, to resolve the uncertainty as to capacity and any potential uncertainty as to capability, and to confirm the Iridium system's compliance with CALEA's technical assistance capability requirements.

Were the Commission to refuse to exercise its authority and decline to grant Petitioners relief, it would be penalizing them for negotiating in good faith with law enforcement, for acting in the spirit of the Communications Assistance for Law Enforcement Act. Rather than penalize the companies who have cooperated most extensively with the government and deter them from seeking to cooperate further with law enforcement, the Commission should extend the carrier compliance deadline, allow Petitioners and law enforcement to resolve cooperatively the issue of the Iridium system's compliance with CALEA, and turn its attention and resources to assisting the industry and law enforcement in answering the more difficult questions remaining in the implementation of CALEA.

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advised the FBI that the Iridium system will provide nationwide service and therefore that a single number for actual capacity and a single number for maximum capacity would be appropriate. Petitioners further advised that the FBI should provide in its capacity notice the number of subscribers it believed should be on the telephony intercept list; the Iridium system is designed to have a telephony intercept list of 4,500 intercept subjects. Petitioners cautioned the FBI that lead time to increase this number would be at least 2 years. Finally, Petitioners advised the FBI that it should determine the number of channels it seeks to be available at any one time for simultaneous intercepts. This number should reflect the increased number of channels used to intercept multiparty calls. Patel Declaration ¶ 27.

Granting Petitioners' request for an extension will not prejudice law enforcement or delay in any way its surveillance capability because, when the Iridium system becomes commercially available, currently scheduled for September 23, 1998, it will include intercept capabilities to satisfy law enforcement's surveillance needs. Therefore, this request for extension should not be opposed by law enforcement.

IV. CONCLUSION

For all of the reasons set forth in this petition, Petitioners request that, pursuant to 47 U.S.C. § 1006(c), the Commission grant a two year extension of CALEA's carrier assistance capability compliance date, effective October 25, 1998.

Respectfully submitted,

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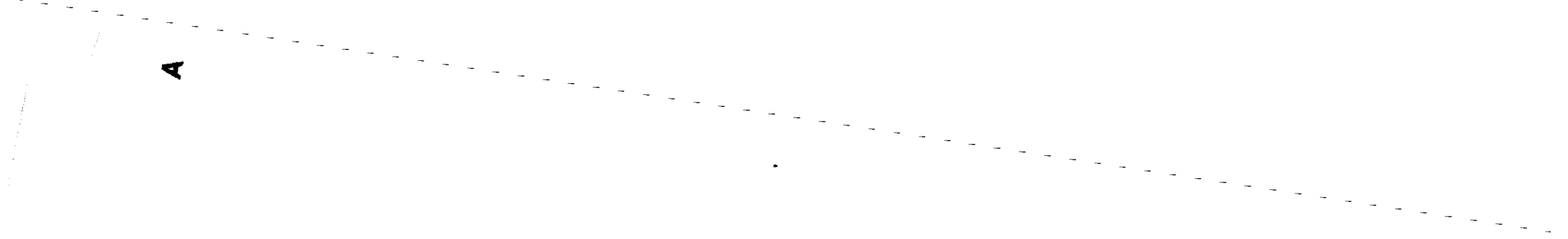
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Declaration of Pramod Patel of Motorola, Inc. in Support of Iridium United States Limited Partnership and Motorola, Inc. Joint Petition for an Extension of the CALEA Assistance Capability Compliance Date

I, Pramod Patel, submit this declaration in support of the Petition for Extension of the CALEA Assistance Capability Deadline submitted jointly by Iridium United States Limited Partnership (Iridium North America, "Iridium USLP" or "INA") and Motorola, Inc. ("Motorola"):

1. I am an engineer with the Motorola Space Systems and Technology Group ("SSTG") and submit this declaration in support of the joint petition for an extension of the CALEA assistance capability compliance deadline of October 25, 1998.

2. I am familiar with Motorola's efforts to implement the Communications Assistance for Law Enforcement Act ("CALEA") and the matters set forth in this declaration.

3. Motorola's Satellite Communications Group ("SatCom"), a leading telecommunications manufacturer in the United States, designs and manufactures transmission and switching equipment, public and private networks, data networking systems, business telephone systems, microelectronic components, communications systems and software, two-way radios, pagers, personal communications systems, cellular telephonics and systems, discrete semiconductors and integrated circuits, computers, data communications, and information processing and handling equipment.

4. SatCom, INA, and Iridium LLC are developing the Iridium Global Mobile Personal Communications system ("Iridium®[1]").

5. The Iridium system is a global network of 66 low Earth orbit ("LEO") satellites linked to 11 Gateway Earth stations which in turn link the satellite network to both the public switch telephone network ("PSTN") and participating mobile terrestrial networks. The system uses a Siemens D900 switching subsystem.

6. On January 2, 1998, the Federal Communications Commission granted INA authorization to offer global mobile satellite services via previously authorized Iridium facilities and connecting foreign facilities.

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[1] Iridium is a registered trademark and service mark of Iridium LLC.

7. SatCom, INA, and Iridium LLC plan to deliver a fully operational Iridium system for commercial use no later than September 23, 1998.

8. Motorola developed the concept for Iridium, is the supplier of the groundstations, and is one of two suppliers of the handsets. INA is the U.S. based Gateway operator, a wholesaler of Iridium services to the Gateways, and hold a Section 214 certificate to provide the global mobile satellite service. Iridium LLC will own and operate the satellites.

9. The Iridium system involves novel and complex issues with regard to intercept capabilities. For instance, there is no central location through which all calls on the Iridium system are routed automatically and where interception can occur.

10. Because the Iridium system is global and intercept requirements can vary from country to country, SatCom had to take into account different countries' needs and requirements in developing intercept capabilities for the Iridium system. Because Iridium will be substantially different from cellular and wireline services, development according to a cellular- and wireline-focused safe harbor CALEA standard was not a viable option.

11. Prior to the passage of CALEA, SatCom and INA began analyzing the technical implications of CALEA for the Iridium system's intercept capabilities, discussing Iridium's capabilities with the government, and exploring electronic surveillance architecture solutions particular to the Iridium system. For example, on June 7 and August 10, 1994, Motorola met with representatives from the General Accounting Office to discuss the scope of the draft legislation and answer their questions about electronic surveillance in the Iridium system. The group discussed whether the Iridium system would be subject to the legislation, what was technologically possible in the first generation, and what the Iridium system could provide in over air interception.

12. After CALEA's enactment, SatCom continued to examine the unique technical issues raised by CALEA in the Iridium context. SatCom devoted many thousands of person-hours of scarce engineer time – skills recognized as virtually impossible to find in any quantity in today's tight market for electrical engineers and software programmers/engineers – for CALEA research and development.

13. SatCom engineers examined the most appropriate and least perceptible intercept location in the Iridium system, pursuing the possibilities of interception at the level of the Iridium subscriber unit ("ISU"), the space vehicle, and the Gateway.

14. In 1995, after examining in detail different intercept options, SatCom engineers found that the most feasible intercept location was the Gateway servicing the ISU subscriber at the time of the interception. This solution would allow the interception of calls to and from ISUs, regardless of whether the other party to the call is in the PSTN or on another ISU.

15. SatCom and INA developed the Iridium system's intercept capability solution while consulting regularly with law enforcement. In meetings, SatCom, INA and the FBI agreed that the Gateway intercept was the best CALEA approach for the Iridium system.

16. SatCom engineers developed a baseline intercept architecture solution under which the switch will recognize the selected telephone number (identified as an intercept target by law enforcement before the call is placed) when a call is made or received, and will route the call (even an ISU to ISU call) through the visiting Gateway where it can be accessed. This interception, "grounding the call," will temporarily and reasonably imperceptibly divert the normal voice traffic flow through the space vehicle constellation.

17. Monitoring will be accomplished by looping a monitoring center, controlled by an authorized person, into the path of the subscriber's call. In effect, the Gateway Switching Center will set up a multiparty call, and transmit voice in one direction for the last leg of the call, to the monitoring center. Through the Siemens D900 switch system, authorized agencies will monitor voice calls for home subscribers as well as foreign roamers in the Iridium network. The subscriber activities that will be monitored are mobile originations and mobile terminations at the visited Mobile Switching Center ("MSC") as well as call forwarding at the gateway MSC. The visited MSC is the MSC serving the subscriber, and the gateway MSC is the MSC that interfaces to the PSTN. Monitored calls may be routed over E1 facilities using Integrated Services Digital Network User Part to a monitoring center.

18. Additionally, call identifying information for each call will be generated and routed over X.25 links. The X.25 interface will be used for transmitting the following call parameters to the monitoring centers: date, time, type of call, calling number, and the called number. Location information will be provided at the beginning of each call.

19. Development of the Gateway intercept capability required substantial enhancement of the system, including: a change in switch, a change in the Earth Terminal Controller, an enhancement to accommodate interfaces needed for the law enforcement monitoring center, and a change in the design layout of Gateway equipment and Gateway building. To have intercept capability, the Gateway had to have the following additional or modified specifications: the intercept file, an expanded database managed by the Gateway Switching Center for the purpose of performing call intercept, which will contain all the subscribers to be monitored; modifications to the Iridium Gateway Application Part interface between the Gateway Switching Center and the Earth Terminal Controller in order for the Gateway Switching Center to notify the Earth Terminal Center that a call is bring intercepted.

20. SatCom and INA contracted with Siemens to provide the Iridium CALEA approach over the earliest available Siemens annual software releases. The baseline intercept capability feature for the Iridium system was introduced in November 1995.

21. After introducing the baseline intercept capability, SatCom, INA, and Iridium LLC continued to exchange numerous questions and answers with law enforcement and discuss interception issues unique to the Iridium system. Motorola, Iridium LLC, INA, and the FBI met on November 13, 1996 to discuss the development of additional Iridium system intercept capabilities. Motorola explained to the FBI the system's capabilities and discussed the unique issues raised by the Iridium system. The FBI agreed that, based on the system described, there was no need to delay the Iridium system's scheduled satellite launches to address CALEA compliance.

22. In April 1997, Siemens released Software Release 5.0, first in Munich, Germany, and then in other sites. This software release included several additional intercept capabilities. In a December 1997 meeting, law enforcement, SatCom and INA reviewed the Iridium system's development and its intercept capability solution. The parties expressed interest in entering into a cooperative agreement with regard to implementation of the Iridium system's CALEA approach.

23. In designing the Iridium system's CALEA approach, SatCom engineers went beyond the core requirements of CALEA to address additional interception issues requested by law enforcement, despite the fact that these capabilities were (and are still) hotly contested by industry in the proceedings concerning terrestrial telephone systems as not required by law. As a good faith accommodation to law enforcement, SatCom and INA designed and developed intercept capabilities going well beyond what the companies viewed as CALEA's requirements of delivery of call content and reasonably available call identifying information.

24. In May 1998, Siemens released Software Release 6.0, including the substance of the intercept features set forth in the TIA interim standard J-STD-025 as applicable to the Iridium system, as well as additional features requested by law enforcement.

25. One remaining issue in the development of an Iridium CALEA approach is capacity. The Iridium system CALEA approach could impact the sizing and capacity of a Gateway since it would utilize many common Gateway resources such as transcoders in the Earth Terminal Controller, and trunking between the Earth Terminal Controller and the Gateway Switching Center. Moreover, the grounding of intercepted calls will use some of the capacity of the K-band feeder link between the space vehicles and the Gateways. The impact of capacity on the Iridium system CALEA approach cannot be accurately predicted until the maximum number of simultaneously monitored calls to be supported by a particular Gateway and the percentage of calls to be intercepted at that Gateway are known. As SatCom explained to the FBI during the November 1996 meeting, providing intercepts at the Gateway would cause a disproportionate loss of capacity because intercepts use twice as many ground-to-satellite channels as an ordinary call.

26. Capacity requirements have yet to be defined by law enforcement. During the November 1996 meeting, the FBI acknowledged that it had not yet defined its capacity needs for Iridium, but stated that it would do so in the near future. In a March 1997 meeting, the FBI stated that it did not know when it would release a capacity notice for satellite service. Also, in March 1998, the Attorney General published a final capacity notice for voice telephony, without addressing capacity requirements for other technologies such as satellite service.

27. SatCom and INA have attempted to assist the FBI in defining its capacity needs. For example, in January 1997, in response to a query from the FBI, SatCom and INA advised the FBI that Iridium system will provide nationwide service and therefore that a single number for actual capacity and a single number for maximum capacity would be appropriate. SatCom further advised that the FBI should provide in its capacity notice the number of subscribers it believed should be on the telephony intercept list; the Iridium system is designed to have a telephony intercept list of 4,500 intercept subjects. SatCom cautioned the FBI that lead time to increase this number would be at least 2 years. Finally, SatCom advised the FBI to